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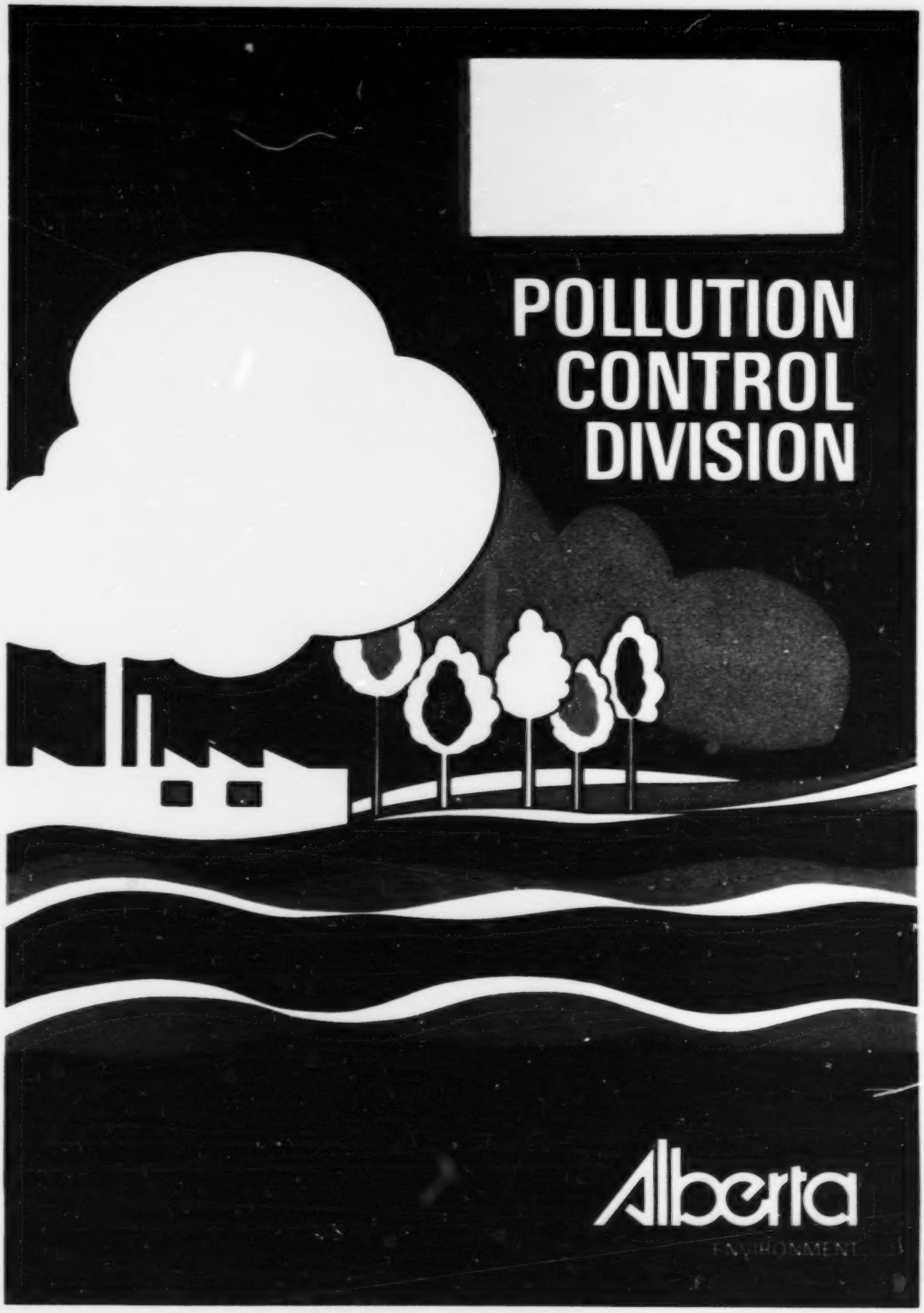

MOTIVATIONAL FACTORS AFFECTING RECYCLING

A SURVEY OF LITERATURE

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INTRODUCTION

This literature survey was commissioned by the Communications Branch of the Alberta Department of Environment in January, 1981. Its purpose was to review recent scientific studies of recycling, in order to obtain information which would be helpful in designing a communications program to encourage people to return beverage containers for recycling.

A computerized literature search was conducted by the Communications Branch. It provided the researcher with 25 journal articles, dissertation abstracts, and other pertinent studies.

In the second part of January, 1981, a meeting was held between representatives of the Communications Branch and the researcher to review the purpose of the project, establish priorities, and agree on the parameters of the project.

The specific objectives of the literature survey were then established as follows:

1. To identify characteristics and attitudes conducive to motivating people to actively support recycling programs.
2. To identify motives and determine why people do, or do not, recycle, and how they might be best motivated to recycle.
3. On the basis of the above information, to establish what communications approach would be most useful and fruitful in encouraging increased beverage container recycling.

EXECUTIVE SUMMARY

1. States and conditions most likely to motivate people to recycle their disposable wastes include:
   a) Awareness of the value and social benefits of recycling;
   b) Personal encouragement to recycle;
   c) Convenience in the mechanism of recycling (i.e., lack of unnecessary obstructions and difficulties);
   d) Proximity and accessibility of recycling containers and depots;
   e) Monetary rewards (payments, prizes, lotteries); and
   f) Easy and welcoming acceptance of recyclable material by retailers and recycling depots.

2. There is not enough literature available on the subject of recycling of returnable beverage containers alone. Any conclusions about can recycling must be drawn from data on the recycling of other materials (paper, glass, etc.) or recycling in general.

3. Although it cannot be firmly established that holding certain attitudes predisposes one to behave in a certain way, some attitude-behavior links related to environmental concerns have been confirmed.

4. Particular needs, desires, incentives and circumstances, usually subsumed under the concept of "motivation", can also induce individuals to participate in recycling programs.

5. People who are likely to return beverage containers for recycling belong to a select group known as "socially conscious consumers".

6. Socially conscious consumers share certain personality traits and socio-economic backgrounds. They are likely to be young, liberal-minded, well educated, responsible people with good self-image, and they tend to believe in the effectiveness of consumer action in battling pollution. Such people, who are likely to be female rather than male, are apt to be motivated to participate in the recycling of all kinds of materials.

7. People who hold friendly and concerned attitudes towards the environment and are verbally supportive of the aims of recycling are most likely to participate in recycling programs.

8. Young people and women are particularly responsive to monetary rewards and prizes.

9. A communication campaign aimed at encouraging increased beverage container recycling should first establish the identity of the audience to be approached, and then choose the most appropriate and economical means to achieve a selected motivational objective.

A SURVEY OF LITERATURE

1. THE SOCIALLY CONSCIOUS CONSUMER

"Policy makers must be able to assess the probability of supportive behavior in order to create and implement effective conservation strategies," says a researcher involved with environmental issues (Humphrey, 1977). One way to go about it is to investigate personality traits, demographic and socio-economic characteristics and attitudes of those who are concerned about the environment, in order to define the type of person who would be most likely and willing to incur the trouble and expense involved in recycling.

Many studies have been done to determine the characteristics of a socially conscious consumer, i.e., one who takes into account the public consequences of his private consumption and is willing to use them to bring about social change (Webster, 1975). In many of these studies, environmental responsibility is posited to be a subset of social responsibility, i.e., people who are generally responsible can be expected to behave in an environmentally responsible way.

One American study, designed to learn more about how those who commit themselves to pro-environmental behavior differ from less involved individuals, disclosed that the recyclers' behavioral commitment extends to a variety of related activities. They are more likely to belong to ecology groups, to obtain information about environmental issues from sources requiring relatively high personal effort. They tend to be younger and belong to higher social classes. They score low on a conservatism factor (i.e., are less likely to

endorse statements dealing with fascism, conventionalism, religious superstition, and the need for order), are more liberal minded, more flexible in their beliefs and behavior, and less tradition oriented. They express belief in the ability to exercise control over events in their lives. They are more concerned about future consequences of present policies, and feel more motivated to take action, even though they may feel that their individual actions may have little long-range impact in the face of anti-ecological activities of large corporations and government agencies (Arbuthnot, 1977).

In another investigation of how demographic factors influence the environmentally conscious individual, a questionnaire was administered to 190 subjects in Barstow, California. It established that "females were significantly more supportive of their environment than males," and, with particular reference to recycling, age and sex of respondents were the affecting variables (Baca, 1976). In several other studies females were mentioned as being more environmentally conscious than males.

A mailed questionnaire, administered to 432 households in an upper middle class community in New England, disclosed that the socially conscious consumer is not the proverbial "pillar of the community," i.e., a self-confident individual who scores high on measures of social reponsibility (engages in community activities, donates time and money to social causes), but rather "he, or more likely she, is willing to engage in purchase behavior which may not be 'popularly accepted,' but is nonetheless consistent with her own standards of responsibility." With specific reference to recycling (trash), the five variables found

to be significant as determinants were education (higher), perceived consumer effectiveness (positive), tolerance, responsibility, and sex (female rather than male). The researcher suggests that the socially conscious consumer can be characterized "as a member of the upper middle class 'counterculture,' but one who operates at a rather low key." He suggests that more effort be devoted to the testing of the disenchanted and asocial but confident consumer (Webster, 1975).

Finally, a comparative study of Sierra Club and Audubon Society members disclosed that the individual's perception of rewards as being attributable to personal action rather than being contingent on uncontrollable forces was an effective predictor of environmental responsibility. So was social class and, to a lesser degree, education.

The researcher refers to other studies to point out that "environmental concern is not a universal phenomenon, but is confined only to a committed subset of the population," and that recent increments in public concern about ecology may merely reflect a more intense commitment by this relatively select gourp. He suggests that more attention be devoted to comprehensive small group studies, as opposed to general opinion surveys. Such studies would isolate the qualities and characteristics which distinguish ecologically concerned people from the rest of the population, and ascertain the attitudinal and socio-economic characteristics of individuals in relation to their expressed level of environmental concern (Tucker, 1978).

The research outlined above suggests that people concerned about ecology do share certain personality traits and socio-economic indicators, such as education, liberalism, responsibility and good self

image, and that they indeed may be a select minority. The implications for a communications program are twofold. It could address itself to the select few with the hope that, as opinion leaders, they will carry the message to the masses:

> To capitalize on the information inputs of the committed citizen, public policy makers must be able to identify those individuals comprising the environmentally responsible segment of society. These individuals are not only more capable of processing and evaluating information on environmental issues, but also can provide public policy makers valuable inputs on the nature of existing environmental problems. More important, the concerned citizens segment may be potential influence agents in the community who are capable of rallying the general citizenry in support of environmental policy programs (Tucker, 1978).

Alternately, the program would aim at the uncommitted majority to convince it of the necessity for conservation.

> ...in a manner similar to the corporate marketer's use of institutional advertising, public policy efforts could strive to expand awareness of the importance of environmental preservation. An educational theme could stress the importance of each individual's contribution to the abatement of pollution (Tucker, 1978).

2. ATTITUDES AND BEHAVIOR

An extensive body of research is devoted to the study of attitudes, and in particular, to the problem of correspondence between attitudes and behavior. A comparison of attitudes (measured by means of surveys) and behavior discloses the conditions under which the two are most likely to correspond, or specifies situations where this correspondence is maximized or minimized.

There is little support for the proposition that attitudes regulate overt behavior in any simple or direct way. Strong linkages between an individual's attitudes and behavior are difficult to establish because attitudes are multidimensional in nature, so that a single composite attitude score is unreliable. In addition, people's actions are strongly influenced by additonal variables, such as social norms, situational influences, constraints from technology or environment, as well as the fact that people do not always know how to translate their attitudes and behavioral intentions into overt behavior.

But there are dramatic exceptions whereby certain attitudes produce certain behavior (predictions of voting behavior are probably the most obvious example and the most sophisticated accomplishment in the field). As a result, studies of attitudes and behavior in the field of environment abound.

A comparative study of glass and can recyclers and non-recyclers regarding such attitudes as dogmatism, liberalism, conservatism and ecology, established that recycling behavior seemed to be related only to attitudes about the environment, but not to the other, more central, features of the personality (Steininger, 1976). The researcher suggests that, for the above reason, the recycling behavior "should be easily modifiable by external rewards."

Another study attempted to identify the variables related to various levels of participation in a city-operated paper recycling program. A questionnaire was administered to 132 female heads of household in a southwestern U.S. city of approximately 250,000 with simultaneous observation of paper recycling habits of the households.

The study revealed that attitudinal measures were significantly related to participation in the program. Perceived support for paper recycling was positively related to favorable attitudes to recycling.

The study discovered firmly different attitudes for those who did not recycle paper and those who went beyond the call of duty to recycle non-newspaper products as well. This finding suggests a consistency of relationship between attitude and recycling behavior for the two extremes of participation (i.e., non-participants and overly zealous participants). The middle levels of recycling participation did not exhibit consistent attitudes, thus suggesting that attitude is a poor predictor of behavior for persons in these ranges, and that in these cases nonattitudinal variables (peer pressure, for example) may be more important (McGuiness, 1977).

A still different study, which consisted of unobtrusive observation of recycling behavior and a questionnaire designed to assess related attitudes of women in Fort Worth, Texas, disclosed that the highest correlation between any of the variables and behavior was for behavioral intent towards recycling (McGuiness, 1973).

Of crucial interest to the researchers is the persistence of the attitude-behavior link over time. Very few studies investigate the problem beyond the standard 30 to 90 days.

An experiment with manual wastepaper basket recycling in a large American corporation found differences in the quality of separation at different times during the experiment and a definite decay in the quality of separation over time. The researcher called it "satiation," which is due to the repetitive, mundane nature of the task of recycling

paper. As a result, "the uniqueness of waste-paper separation wears off, and old habits reappear."

It was found that periodic encouragement of participants in the experiment improved the quality of wastepaper separation but not enough to make statistically significant differences. However, the separation was nevertheless somewhat better with more convenient methods and personal encouragement. There was also some support for the hypothesis that there is a positive relationship between receptiveness to wastepaper separation in offices and co-operation with a recycling program. The researcher concludes that cognition and behavior may be highly coincidental in the short run (i.e., voting behavior), but "with time, the effects of satiation or cost of routine behavior causes behavior to diverge from acts described by verbal attitudes (Humphrey, 1977).

A communications program aimed at providing support for any recycling scheme would have to take into consideration that, at the very least, friendly attitudes towards the environment and the scheme would have to be induced for it to achieve a measure of success. Some later intervention, to maintain the momentum of the scheme, would also be required.

2.1 THE FOOT-IN-THE-DOOR TECHNIQUE

The above discussion of attitudes could only proceed on the assumption that attitudes cause or lead to behavior. However, the classic "chicken and egg" dilemma can be found in this area of study as well, and some social psychologists maintain that behavior comes first and leads to certain attitudes. One theory of self-perception maintains

that individuals make inferences about their attitudes and beliefs on the basis of self-observation of their behavior.

This self-perception theory has been used to interpret attitude and behavior modification obtained by means of the gradation technique, also known as the "foot-in-the-door" technique. The technique involves making requests or demands in stages, beginning with a small request (which establishes the proverbial foot-in-the-door) and proceeding to bigger requests, the last of which may call for a specific behavior. For example, one might begin by asking an individual to fill out a questionnaire on the subject of recycling, a week later ask him to distribute some pamphlets about recycling, still later ask him to save two cans for recycling purposes, in order to finally ask him to become a conscientious recycler. By complying with the first request to fill out the questionnaire, the subject supposedly acquires self-perception as a complier, and by agreeing to save two cans for recycling purposes, the subject acquires self-perception as a recycler. Thus, his behavior leads him to adopt certain attitudes. Compliance with the initial request results in a perception of self which is consistent with the subject's actions. Subsequent behavior is then consistent with the new self-perception (Arbuthnot, 1976-77).

Researchers have successfully tested the foot-in-the-door technique, especially in short-term studies, where the requests made were basically passive in nature and required one-time-only responses (answering survey, displaying sign, donating money) in the presence of the experimenter. The question remains whether the approach can successfully induce behavior changes which require more extensive,

active, and long-term efforts, sustained without supervision -- such as an enduring and self-motivating recycling of cans, for example.

A study of 291 adults in a rural university community in Ohio, which included a survey (on issues concerning recycling), an appeal (to save some cans for recycling), and a letter (describing benefits of recycling,), found that the induction of active and enduring compliance with the final (active) request cannot be produced by compliance with a single prior (basically passive) request. Just because someone agrees to fill out a survey on the subject of recycling does not guarantee that he will become an enduring recycler.

However, if the prior requests are both of an active nature and require a substantial effort on the part of the individual, then change in self-perception may indeed take place and produce lasting behavior modification. It was also found to be important for the prior and criterion requests to be similar in both content and actions required, i.e., if the final objective is to secure lasting can recycling, the prior request should have something to do with can recycling -- it could be a request to save one can a week for recycling purposes.

The study sums up its results by pointing out that "compliance was greatest as the result of multiple compliance to effortful requests, one of which is highly similar in nature to the criterion behavior." It goes on to conclude that "the achievement of lasting behavioral compliance which is actively performed in the absence of the experimenter apparently requires self-perception concerned with the behavioral disposition component of attitudes" (Arbuthnot, 1976-77).

The foot-in-the-door technique can be used to promote pro-social behavior in a variety of environmental problem areas. The research shows that inducing subjects to perform a simple task similar to the ultimately desired produces a high compliance rate. However, it has not been clearly established yet that the performance of these tasks does indeed produce a lasting change of attitudes.

A study of 232 middle class families in a suburb of Los Angeles, who with the help of the foot-in-the-door technique were made to participate in the curbside collection of glass and metal refuse, disclosed that the participants' attitudes towards recycling did not change as a result of their participation in the program, and did not differ from the attitudes of a control group which was NOT asked to recycle (Lowman, 1973). The results would seem to contradict the proposition that a person's attitudes follow from his behavior. Moreover, eight weeks after the termination of the curbside collection, personal recycling among all participants approached zero.

The same study also emphasizes that the transfer from passive to active behavior is most likely to cause problems. While complying with a small request does result in behavioral impetus for verbal compliance with a large request, that verbal compliance with the large request does not necessarily result in impetus for the actual performance. The findings of the Arbuthnot study, that the original request must be of an active nature if the final request is of the active nature, are thus confirmed.

Should the gradation technique be harnessed to the requirements of a communications campaign, the technique's limitations must be kept in

mind. Making requests gradually does work, but the contents of the requests must be carefully chosen, if they are to lead to a clearly defined desired goal.

3. MOTIVATION AND RECYCLING

In view of the above discussion, it can be said that the attitude-behavior link is tenuous, no matter which way it works. Attitudes can be defined as relatively enduring organizations of beliefs regarding an object or a situation which predispose one to respond in some preferential manner. As already mentioned, they constitute only one variable in the analysis of an individual's behavior. The behavior can also be scrutinized according to one's motives, i.e., needs, desires, fears, incentives and circumstances which induce one to act in a certain way. Motivation can provide an explanation why a person behaves as he/she does.

In none of the studies discussed above has an attempt been made to ask subjects directly why they did or did not recycle. Such self-diagnosis can be quite accurate in pinpointing reasons for specific behavior.

Two British researchers adopted this direct approach in a study of returnable bottles, conducted in 178 householders and 18 retailers in the Leicester area of the United Kingdom. Household subjects were asked very specifically whether they could distinguish between returnable and non-returnable bottles, what proportion of returnable bottles they did not return and why, whether they knew deposit levels for different types of returnable bottles, etc.

The results indicated that there was more to the problem than the conventional diagnosis that consumers "just cannot be bothered to return bottles". Many consumers found the returning of bottles difficult because they were heavy and awkward to carry, because they did not always know whether the bottle was returnable and where they could get the deposit refund on it, and because they encountered problems finding a shop that would accept their returnable bottles.

Consumers were asked: "What would encourage you to return more bottles?" The largest single group said it would be encouraged if the process were made easier. Another large group said returns would increase if an advertising campaign demonstrated that the social benefits of returning bottles were important and that their bottles were indeed wanted back by the bottlers and retailers. Higher deposits were also mentioned as an inducement. Thus, the ease of returning bottles and the awareness of the importance of returning bottles, as well as the financial inducement, were considered crucial factors in motivating British consumers to return bottles.

The testing of the retailers demonstrated that, although a few of them positively supported the use of returnable bottles because this attracted back customers who were likely to buy something, most placed restrictions on the types of bottles they accepted on grounds that it was awkward to store them, and that their suppliers would not accept them. In other words, they did not perceive any compensation or rewards for accepting returned empty bottles.

The researchers concluded that more consumers would be motivated to return bottles if the task was made easier. That would probably be

accomplished best "by giving the consumer more information, on the bottle's label and at the retail outlets, that the bottle is returnable with a deposit on it, and by achieving a greater acceptance of returned empty bottles by the retailers, perhaps through the use of a differential deposit system" (Fisher, 1979).

Although dealing exclusively with bottles, the study clearly indicates that financial inducement is not enough to motivate people to recycle. Equally important is making consumers aware of the importance of recycling and explaining the practical details involved in the process (why, when, where, for how much) to make the task less cumbersome. The findings, although coming from another country, could be easily applicable to the problem of can recycling in Alberta, where the fiscal incentive alone (2 cents per can) has not been entirely successful in motivating consumers to return large numbers of cans for recycling.

4. ANTECEDENTS AND CONSEQUENCES

Much of the behavioral research in the social sciences can be dichotomized as interventions involving the manipulations of behavioral antecedents or interventions manipulating behavioral consequences. Regarding the first group, factors found to increase motivation to dispose of litter properly include the number of trash cans in the environment, the attractiveness of those cans, and the amount of litter currently in the environment. Displaying explicit instructions about how to dispose of litter also increases compliance. The effectiveness of prompting techniques increases with the specificity of the request and the convenience of the requested behavior. If the prompt becomes so

specific that it takes on threatening characteristics or an insulting tone, reactance may be elicited and result in decreased compliance (Brasted, 1979).

Behavioral consequences include a variety of motivational inducements, such as cash payments, lotteries, and individual rewards of various kinds. Research in this area deals mostly with litter control or paper recycling and is conducted, overwhelmingly, on children or college students. The results indicate that incentives of monetary value can be successfully employed to increase motivation to recycle, especially among young people.

Six university dormitories in Virginia were covered in a comparative study of a prompt condition (flyer), a raffle contingency (one ticket for each individual per pound of paper), and a contest contingency ($15 donated to the treasury of the winning dorm). The study disclosed that the flyer alone had little effect on recycling behavior. The contest was somewhat successful, and the raffle was substantially successful. Removal of the reinforcement contingency resulted in the immediate return of baseline levels. Females turned out to be much more conscientious recyclers than males. The researcher concludes that "community ecology programs should at least offer individuals the possibility of receiving a tangible reward for their ecology improving behavior (Witmar, 1976).

Other research reviewed (Hamad, 1977; Ingram, 1975; Lubyen, 1975; Geller, 1975; Reid, 1976; Compton, 1973) reports very similar results: in any comparative situation between the efficacy of prompts and tangible fiscal rewards, or proximity of containers versus fiscal

rewards, fiscal rewards are consistently more successful and women are consistently more affected by the manipulation than men. One study reported that individuals actually created litter to obtain rewards for disposing of it. Another one reported that location was a significant variable in littering behavior:

> Apparently there are certain environments in which individuals feel that littering is an acceptable and appropriate response. More research is necessary to determine relationships between environmental setting and perceived appropriateness of littering. Prompting devices must be designed specifically for certain environments, since in some environments prompts designed to result in a specific behavior may elicit reactance (Brasted, 1979).

Although ostensibly successful, motivation through rewards has serious shortcomings. Most of the motivational inducements are specific to a particular place or event and may not transfer to other situations. The technique is costly because it requires supervision and a reward-dispenser. It may induce subjects to generate more anti-litter behavior to obtain reward. It is also difficult to determine causal factors in any successful prompting experiment, and thus difficult to replicate the experiment successfully in another place. But most important of all, follow-up data tends to show no long-term changes in behavior patterns:

> It would seem that the administration of rewards or the use of prompts may result in the subject deciding that the reward is sufficient justification for the behavior, resulting in an attribution of the cause for compliance of the situation rather than to some internal disposition. Thus, in the later absence of the situational variable, compliance need not recur. The behavior technology approach, therefore, may be useful to the extent that the designers structure the situation to produce internal attributions on the part of complying subjects ... (Arbuthnot, 1976-77).

While prompting can be used to motivate convenient anti-litter behaviors and rewards may motivate relatively inconvenient anti-litter behavior (such as picking up another person's litter), neither method, if used alone, leads to long-lasting pro-environmental dispositions and behavior.

5. THE ECONOMY OF RECYCLING

Financial rewards may motivate children or students of recycle, but they hardly accrue to the recyclers. A Modesto, California, couple have been operating a recycling centre for several years only because of personal commitment bordering on obsession and thanks to substantial public subsidies (Goldstein, 1977). A city-run pilot project in Seattle which established variable garbage rates for separated or not separated garbage (rates ranged from $1.00 per month to $5.20) found the participation to be in the 30 per cent range, with middle and upper middle income groups being more interested than the lower income groups. An extensive education and information campaign preceded the program and continued with a steady stream of reminders (Mulligan, 1979).

Another study investigated data on the operation of the user charge system in five communities: Burbank, Calif. (flat fee structure); Sacramento, Calif. (fee structure varies according to quantity presented for collection); Provo, Utah (price varies according to level of service); Grand Rapids, Mich. (fee structure varies according to quantity presented for collection); and Tacoma, Wash. (price varies according to quantity presented for collection and level of service demanded). The researchers found that the price had no effect on the quantity of trash presented or on the waste generation. They concluded

that "user charges, in and of themselves, may not have the economic effect, in the narrow sense, traditionally associated with market institutions (where, when the price of a good increases, the quantity of purchases will decrease). Quantity of solid waste produced is highly inelastic with respect to incremental pricing..." (Efaw, 1979).

The peculiar nature of trash economics leads some researchers to recommend that mandatory ordinances achieved through and supported by a good education/information program are probably the key to successful recycling:

> "Trash recycling behavior may be controllable, but may be an ineffective direct solution to the solid waste problem. This seems to be due to the constraints placed upon recycling facilities (e.g., high effort requirements, and small payoffs). Until trash recycling is profitable to the operators of recycling facilities, individual recycling efforts may have no meaningful effect upon solid waste accumulation. Thus, promotional efforts concerning recycling might best be aimed at passing pertinent legislation, at obtaining additional funding, or at getting manufacturers to pay higher prices for recyclable trash (Compton, 1974).

A 12-month-long experiment in Nothingham, New Hampshire, required residents to keep waste separated into four categories -- glass, metal, newspaper and other -- and to bring it to the recycling/incineration plant. The level of compliance, which was about 90% was found to be the function of the material to be separated, and was highest for glass and lowest for newspapers, with metals falling somewhere in between.

The high level of compliance was attributed also to the manner in which the ordinance was enacted; it was not decreed but adopted by a public vote with the support of town officials. The vote was preceded and followed by an extensive education/information campaign which

included meetings and mailings explaining the proposed procedures. Also, compartmentalized waste containers were provided to any household wanting them (Tichenor, 1978). The researcher felt that the information program undertaken to increase public understanding and acceptance of the program was instrumental in assuring a high compliance rate.

Finally, an American review of the beverage container problem which examined the feasibility of ten specific policies falling within the categories of a) restrictions, b) incentives, and c) use of indirect influence, concluded that "a mandatory high deposit or a low tax, with the revenue being used for more frequent litter collection, could provide significant environmental benefits by reducing the number of visible littered containers" (National Technical Information Service, 1972).

6. SUMMARY AND CONCLUSIONS

The results obtained from the above survey of literature have limitations which qualify any conclusions drawn with respect to can recycling.

For one thing, the data is overwhelmingly American. Only one study comes from Great Britain and no research comes from Canada. Nevertheless, there is little reason to believe that American findings cannot be applicable to Alberta, since the patterns of can use and disposal are quite similar. The differentiating factor to keep in mind is the presence of the Alberta legislation prescribing a mandatory 2¢ refundable can deposit, which is included in the price of soft drink and juice containers. Not all American states have similar legislation and

therefore, in some of them, the financial motive in individual recycling may be absent.

A majority of studies discussed above deal with paper recycling or general trash. Can recycling is mentioned only a few times, usually in comparison with paper and/or glass recycling. Only one American study deals exclusively with cans -- it is ten years old and concerned mostly with alternative government policies for can recycling. A question must be asked whether data obtained for paper and glass recycling is linearly transferable to cans. Although recyclable refuse shares common characteristics and justifications for recycling, some properties of cans (such as size, shape, as well as the price paid for them) may make can recycling unique in some respects.

Most test cases quoted are either general population studies or experiments conducted on two distinct population sub-groups: women and young people. There is little attempt to focus on active recyclers in order to zero in on their unique motivational dispositions, which set them apart from non-recyclers.

Furthermore, most studies are short-term, and measure behavior changes over a few weeks or months, rather than years.

No study attempts to assess the viability of a communication/ education campaign as a motivational tool in itself, although some studies mention the helpfulness of such campaigns in reaching desired behavioral goals.

With these reservations in mind, it can be summed up that those who regularly bring in empty soft drink cans to recycling depots are members of a select group of people known a socially conscious consumers. These

people share certain common personality traits and socio-economic backgrounds. They are likely to be young, liberal-minded, relatively well educated, generally responsible and personally confident individuals, with good self-image. Because of their awareness of pollution and confidence in the effectiveness of consumer action, they probably are motivated to do their part and to live up to their own standards of behavior. Such people, who are more likely to be women than men, are apt to handle responsibly all recyclables.

The link between attitude and behavior is tenuous; it is not a simple linear relationship, and individual behavior is influenced by factors other than attitude. Nevertheless, some links related to environmental concerns have been established. Recyclers are more likely to have friendly and concerned attitudes towards the environment and are verbally supportive of the aims of recycling.

One particular technique, which assumes that a change in behavior leads to a change of attitude, calls for a gradual manipulation of behavior by increasing, in stages, the intensity of tasks demanded. If the prior and criterion requests are similar in content and actions required, a lasting behavioral modification, contributive to recycling, can be achieved.

The study of motivation in recycling has been neglected because, unlike "attitude", the concepts of "motive" and "motivation" are not well defined. As a result social scientists avoid them, and none of the studies discussed in this survey mentions them. They get around them with substitute words, such as inducement, impetus, encouragement, incentive -- something which causes a person to act.

The limited literature available points to several states and conditions likely to motivate people to participate in a recycling program. These are, not necessarily in this order:

1. Awareness of the value and social benefits of recycling;
2. Personal encouragement to recycle;
3. Convenience in the mechanism of recycling (lack of unnecessary obstructions and difficulties);
4. Proximity and accessibility of recycling containers and depots;
5. Monetary rewards (payments, prizes, lotteries); and
6. Easy and welcoming acceptance of recyclable material by retailers and recycling depots.

The latter objective is particularly difficult to achieve because recycling is not an economically viable business, for the consumer or the recycling outlet, and does not follow conventional laws of market economics. As a result, mandatory recycling is often suggested as the only workable solution to the problem of waste disposal. However, the problem is mitigated somewhat in Alberta, where legislation provides for depots where refunds can be obtained on demand.

A communication campaign designed to encourage increased beverage container recycling would have to draw extensively on data on general waste recycling, coming from the United States. There is not enough information available on disposable can recycling alone, and in Canada. If such information exists, it is probably proprietary, in the hands of aluminum producers or recycling depot managers.

The campaign would have to establish first the identity of the audience to be approached, and then decide which of the available

motivational objectives can be most successfully achieved with means and funds provided for that purpose.

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